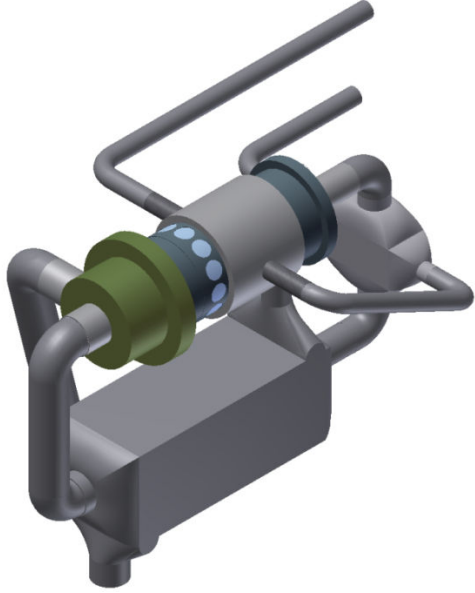


NASA SBIR/STTR Technologies

Intercooled Turbo-Brayton Power Converter for Spaceflight Applications

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<p>Identification and Significance of Innovation</p> <p>Future NASA space missions require advanced thermal-to-electric power converters that are reliable, efficient, and lightweight. Creare proposes to develop a turbo-Brayton converter with high efficiency and specific power for these applications. Gas bearings will provide reliable, maintenance-free, long-life operation. Discrete components can be packaged to fit optimally with other subsystems. Continuous gas flow can communicate directly with remote heat sources and heat rejection surfaces without ancillary heat transfer components and intermediate flow loops. Creare is well suited to succeed because we have a long history developing Brayton systems for challenging spaceflight applications</p> <p>Expected TRL Range at the end of Contract: 4</p>	
<p>Technical Objectives</p> <ol style="list-style-type: none"> 1. Fabricate and test breadboard converter assembly 2. Demonstrate benefits for spaceflight applications 3. Mature approach and enhance readiness level for future programs <p>Work Plan</p> <ol style="list-style-type: none"> 1. Develop detailed component designs 2. Design breadboard converter assembly 3. Fabricate turbomachine 4. Fabricate heat exchangers 5. Assemble converter 6. Measure converter performance characteristics 	<p>NASA Applications</p> <p>Power systems for space exploration probes, planetary surface rovers, nuclear electric propulsion, and space stations. Heat sources include radioisotope decay, fission reactors, and concentrated solar radiation</p> <p>Non-NASA Applications</p> <p>Power systems for unmanned aerial vehicles, unmanned undersea vehicles, and mobile electric generators. Particularly attractive for mobile applications, environments with significant particulate contamination, and environments exposed to corrosive substances such as sea water. Heat sources include fossil fuel combustion, biofuel combustion, refuse burning, and concentrated solar energy.</p> <p>Firm Contacts</p> <p>Jeffrey Breedlove, Principal Investigator 603-640-2360; jfb@creare.com Sheryl D. Belanger, Contracts Manager 603-640-2341; contractsmgr@creare.com</p>

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